provide enablement for any DNA that would encode for any protein or LERK-6 that binds hek/elk; or to any specie form of such.

With respect to claims 1, 12, 16 and 20, Applicant has canceled these claims, making their rejection moot.

Claims 2, 13, 17 and 21 are directed to DNA sequences that encode polypeptides which bind hek/elk and which are at least 90% identical to SEQ ID NO:2 and SEQ ID NO:8. The Examiner asserts that given the vast number of possible sequences that could be encompassed given the constraints posed by the specification, there is no enablement as to what nucleotide insertions, deletions, or substitutions could be made to give 90% identity and still produce a functional extracellular domain, transmembrane region, cytoplasmic domain, or hek/elk binding region. Examiner believes that it would be undue experimentation for the skilled artisan to screen all possible variants to determine which had binding activity, because all possible variants of the LERK-6 that *encode polypeptide* that bind to hek/elk are neither described nor enabled (italics added).

Applicant disagrees with the Examiner's position and respectfully submits that the Examiner has misstated the standard of enablement. The standard does not require that all possible embodiments embraced by the claims be described. Indeed the standard does not require working examples. The standard is whether a person skilled in the art is able to make the embodiments and determine which embodiments would be inoperative or operative, without undue experimentation, using the state of the art and applicant's written disclosure. The test for undue experimentation is not merely quantitative, since a considerable amount of experimentation is permissible, if it is routine.

The present specification discloses sequence information for murine and human LERK-6. The disclosure additionally describes assay methods for determining if a LERK-6 polypeptide or LERK-6 polypeptide variant binds hek/elk (see Example 5). The specification is very thorough in its description of methods for making analogues, mutants and variant LERK-6 polypeptide and DNA having homology to native LERK-6. And the specification describes assays for testing variant LERK-6 for their ability to bind hek/elk. It cannot be disputed that such techniques are routine matters for persons having ordinary skill in the art and require no inventive thought or actions by the artisan. Furthermore, it should be mentioned that in this art the level of ordinary skill is very high. Therefore, knowledge of a variety of sophisticated techniques and methods is presumed. It requires only routine methodology to construct a DNA that encodes a polypeptide that has a high degree of similarity with a predetermined polypeptide; it also requires only routine methodology to test whether such polypeptide binds hek/elk. What is important is whether one of ordinary skill in this art will be required to use inventive thought in order to prepare and test the polypeptides. The mutagenesis procedures allowing thousands of DNA and polypeptide variants to be prepared and tested in an almost automated manner are known in the art. With such technology available there is little basis for arguing that preparing and testing vast numbers of variants involves

undue experimentation. Thus, the present specification describes that which encompasses LERK-6 polypeptides and enables one of ordinary skill in the art to make polypeptides using routine procedures and determine which polypeptides would be operative, with no undue experimentation.

Further to the above remarks, the PTO has made it clear that the teaching required to support claims encompassing a number of molecules which are further limited by reciting an operable activity, is satisfied if the disclosure teaches how to make a candidate molecule and how to test the candidate molecule for the activity. *Ex parte Mark* 12 USPQ2d 1904 (Bd. Pat. App. & Int'f 1989). Since the specification, in combination with the knowledge of those skilled in the art, teaches how to make LERK-6 variants and the specification teaches how to test for hek/elk binding, the specification enables the subject claims Any requirement that Applicant limit the claims to specific LERK-6 DNA sequences does not adequately protect Applicant in view of the scope of the invention and the disclosure. Thus, to demand that Applicant limit the claimed invention to specific LERK-6 structures when it is well within the knowledge of those skilled in the art to use routine experimental techniques to make and test LERK-6 variant DNA and polypeptides that bind hek/elk is improper.

Applicant respectfully submits that the Examiner's apparent requirement that the specification identify molecule regions that are critical for activity is improper. Furthermore Applicant respectfully submits that any requirement that the specification provide results of structure/function studies with examples of variations is similarly improper. There is nothing in the law that requires such data. The enablement standard requires only that one skilled in the art be able to practice the claimed invention without undue experimentation. Once provided with the native LERK-6 sequences disclosed by Applicant, one of ordinary skill in the art can routinely make and test variant LERK-6 molecules. The Examiner's position that in the absence of structure/function information providing LERK-6 variants necessarily involves undue experimentation has no basis. The law is clear that if one can make a molecule and test the molecule, the claim is enabled. The Examiner has provided no documentation to support the assertion that making and testing variant LERK-6 involves undue experimentation. As for the Examiner's opinion that the claimed polypeptides might read on previously characterized proteins, or include proteins with functions not envisioned by Applicant, this is pure speculation and the Examiner has offered no documentation in support of such an opinion. In the absence of documentation supporting such assertions, the Examiner's comments carry no weight.

The Examiner asserts that the application does not set forth art-recognized procedures for obtaining homologous proteins. Applicant respectfully disagrees with this position and directs the Examiner's attention to page 8 of the specification. In paragraph 2 several references relating to mutagenesis procedures are cited. Paragraph 1 provides general direction for altering polypeptides and nucleotides. Applicant submits, however, that even in the

absence of guidance in the specification, one skilled in the art possesses the knowledge and skill to routinely apply mass mutagenesis procedures and test molecules for activity.

Finally, the Examiner cites *Ex parte Forman*, 230 USPQ 546 (BPAI 1986) and *In re Fisher*, 166 USPQ 18 in support of the Examiner's position. Applicant respectfully submits that these cases have little in common with the instant specification and claims. In *Ex parte Forman* the claims at issue included mutant strains and the Board found that hyperconjugation techniques were not sufficiently developed and undue experimentation was required to obtained viable mutant strains. This differs from the present claims and specification in that the mutagenesis and testing procedures are highly developed and the claims positively recite an activity. According to *Ex parte Mark* when the claims recite an activity and one can readily test for the activity and is able to make candidate molecules for testing, that is all the teaching that is required. As for *In re Fisher*, the claims dealt with the potency of ACTH preparations and covered potencies exceeding 1. The court found that the specification enabled only potencies up to 2.3. These claims and the teachings of the Fisher disclosure relate to technologies that are over 35 years old and have little in common with the highly advanced state of DNA mutagenesis and polypeptide testing that exists today. Moreover, there is little similarity between the claims of Fisher which concern themselves with activity limitations, and the claims of the instant application with define a composition in terms of its structure and its activity.

Applicant respectfully submits that the present specification describes that which encompasses LERK-6 polypeptides and enables one of ordinary skill in the art to make polypeptides and DNA using routine procedures and determine which polypeptides would be operative, with no undue experimentation. Accordingly, the Examiner Section 112, first paragraph rejection is improper and should be withdrawn.

In view of the foregoing amendment and remarks, Applicant submits that all claims pending in this application are in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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CERTIFICATE OF MAILING

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